



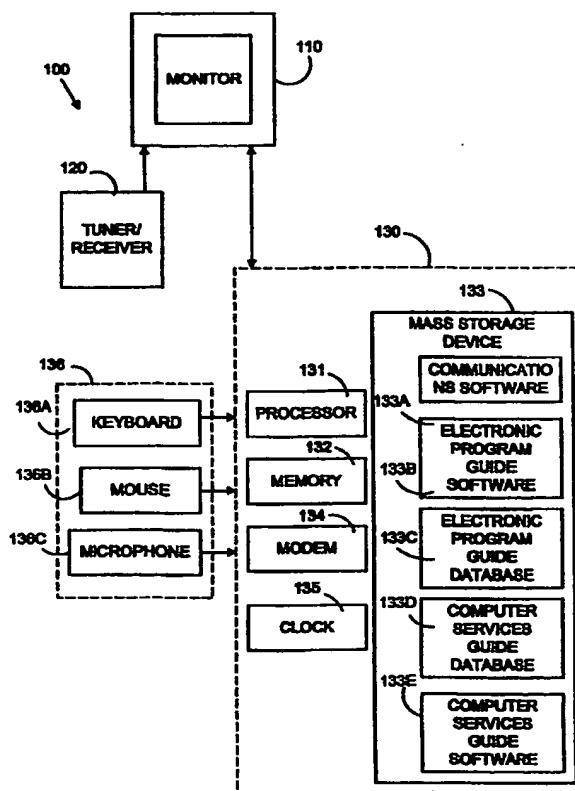
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: ASSOCIATING WEB SITES TO TELEVISION PROGRAMS

## (57) Abstract

One type of home entertainment system, known as a PC-TV system, integrates televisions and computers into one system, allowing users to switch between using a video monitor to watch television programs or to support computer activities, like work processing or surfing the world wide web. Although the systems often include electronic program guides which help users sift through thousands of available television programs, these guides lack data about the thousands of on-line computer services, such as websites, that are available. Accordingly, the present invention provides a system and method that not only includes data about websites generally, but also allows users to logically relate this data to specific television programs. In one system embodiment, the system automatically displays a list of relevant websites for a given channel or program and gives the user the option to communicate with a website from the list. Thus, the present invention makes it much easier to manage and access the information available from on-line computer services.



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## ASSOCIATING WEB SITES TO TELEVISION PROGRAMS

**Related Applications**

5           This application is related to the co-assigned and co-filed applications, "Method for managing multiple channel maps from multiple input devices in a multimedia system," "System for time-shifting events in a multi-channel convergence system," "Individualized parameter control for multiple media sources in a data processing system," "System for combining electronic program guide data," "System for scheduled  
10          caching of in-band data services," and "Integration of Internet sources into an electronic program database list," all of which are hereby incorporated by reference.

**Field of the Invention**

15          The present invention pertains to electronic program guides for televisions, particularly to electronic programming guides that include information about websites.

**Background of the Invention**

20          The home electronics industry, in the midst of an on-going convergence of televisions and computers, has produced a new class of products, known as PC-TV systems, or personal-computer-television systems. In their simplest form, these systems allow users to selectively switch between using a video monitor, or display, to watch television or to support computer activities, like word processing, creating spread  
25          sheets, playing computer games, or even surfing the world wide web. A seminal example, the Gateway Destination PC-TV system, from Gateway 2000, Inc., not only weds a television to a personal computer, but allows system expansion to receive programming from internal sources such as video-cassette recorders, laser-disc players,

and video cameras and from external sources such as direct-broadcast-satellite receivers, etc.

With the growth in the number of video channels, particularly cable and satellite television channels, many PC-TV systems now include an electronic program guide -- a database listing available television channels and their program schedules. In these systems, the electronic program guide (EPG) operates as a user-prompted menu system, which logically organizes and displays thousands of program options. Typically, the user uses a wireless remote control both to prompt display of the EPG and to select a program for viewing or recording. The user may also update contents of the program guide by downloading data from a remote data source.

Conventional EPGs, tailored for television systems, suffer from a common disadvantage which limits their usefulness in PC-TV systems. Specifically, they lack data about on-line computer services, such as websites, which are relevant to specific television or video programming. The failure of current EPGs to provide this data makes it awkward, and simply inconvenient, for users to access websites.

For example, television broadcasters such as ABC, CBS, NBC, and FOX maintain websites which provide specific information about their respective television programs. Also, television advertisers commonly show website addresses during commercials, encouraging interested viewers to seek more information about their advertised products. However, typical televisions lack the capacity to link to websites, leaving many interested viewers with the unattractive alternative of getting up to use their computers. And even in PC-TV systems that allow concurrent PC and TV usage, linking to these websites is cumbersome because PC-TV users still have to invoke their Internet browser software and then enter the address of the website to gain access.

In one limited solution, television broadcasters include their website address as part of the television signal, specifically within its vertical blanking interval (VBI). In some PC-TV systems, this allows automatic or selective linking to the website. However, the approach is severely limited, not only because few broadcasters transmit their website addresses within the VBI and special hardware is needed to decode the

addresses, but also because users have no control over what website addresses the  
broadcasters transmit.

Accordingly, there is not only a need for a system that provides data about  
websites generally, but also a need for a system that relates this data to specific  
5 television programs.

### Summary of the Invention

To address these and other shortcomings, the present invention provides a  
system and method that enables users not only to establish a database of websites or  
10 other computer services, but to adaptively relate these websites and computer services to  
specific television programs.

Specifically, one system embodiment includes a receiver for receiving a  
sequence of scheduled programs; a database that relates data about a first website, or  
more broadly a computer service, to one scheduled program; and a display for  
15 displaying both the one scheduled program and the data about the first website. The  
data about the first website preferably includes a network address or telephone number  
for communicating with the first website, facilitating an option to communicate with the  
website while watching the television program.

Another embodiment enables a user to enter or change the website data, and  
20 even to relate or associate the website data to other scheduled programs. This feature  
allows the user to continually update or adapt the database to personal preferences.

Other embodiments and advantages of the invention will become apparent after  
considering the accompanying drawings and the following detailed description.

### Brief Description of the Drawings

- 25  
Figure 1 is a diagram of a PC-TV system incorporating the invention.  
Figure 2 is a table illustrating a data structure for an electronic-program-guide  
feature of the PC-TV system.

Figure 3 is a table illustrating a data structure for a computer-services database feature of the PC-TV system.

Figure 4 is a flowchart of a method incorporating the invention.

Figure 5 is a facsimile of a display output during execution of the method of Figure 4.

### Detailed Description of the Preferred Embodiment

The following detailed description, which references and incorporates Figures 1-5, describes and illustrates specific embodiments of the invention. These embodiments, offered not to limit but only to exemplify and teach the invention, are shown and described in sufficient detail to enable those skilled in the art to practice the invention. Thus, where appropriate to avoid obscuring the invention, the description may omit certain information known to those of skill in the art.

Figure 1 shows a PC-TV ( or convergence) system 100 with a novel database which not only includes data about on-line computer services or websites, but also relates this data to specific channels and programs. Specifically, PC-TV system 100, which preferably incorporates all features of the Destination PC-TV system from Gateway 2000, Inc. of North Sioux City, South Dakota, includes a monitor 110, a tuner-receiver 120, and a personal computer 130.

Monitor 110, the heart of the system from a user perspective, displays video programming from tuner-receiver 120 or personal computer 130. Monitor 110 also includes built-in audio speakers (not shown) for outputting audible signals. In the preferred embodiment, the monitor provides a super-VGA display format.

Tuner-receiver 120 receives audio or video or digital data signals via direct connection or wireless coupling to a multi-channel programming source. Each channel carries a scheduled sequence of programs, or programming events. In the preferred embodiment, tuner-receiver 120 accepts cable television signals, local over-the-air broadcast signals, and direct satellite television signals, which carry video, audio, or digital data.

Personal computer 130, operatively coupled to monitor 110 and tuner-receiver 120, includes a processor 131, a local memory 132, a mass-data-storage device 133, a modem 134, a clock 135, and a set of user interface devices 136. Interface devices 136 include a keyboard 136A, a mouse or other pointing device 136B, and a microphone 136C, all of which support user interaction with a graphical user interface, preferably a version of Microsoft Windows.

Mass-data-storage device 133, which preferably includes a hard drive, stores executable communications software 133A, such as Netscape Navigator or Microsoft Internet Explorer, to communicate with remote computer systems, via the Internet or other computer network. When executed, this software causes computer 130 to operate a network communications device. Also, storage device 133 stores executable electronic program guide (EPG) software 133B, preferably Smart Guide software from Intel Corporation. This software allows program schedules to be updated through a direct-dial connection to a remote server. However, any functionally equivalent hardware, software, or firmware implementation of an electronic program guide will suffice.

Additionally, storage device 133 stores an EPG database 133C and a computer-services database 133D. (Although these databases as shown and described as separate entities, databases 133C and 133D may be merged easily into a single comprehensive database.) EPG database 133C, which preferably contains programming schedules for most, if not all, currently-available cable and satellite television channels, cooperates with EPG software 133B to assist a user in finding and accessing relevant television programs. Figure 2 shows a preferred data structure of EPG database 133C.

Computer-services database 133D logically relates information about a set of computer services, preferably networked computer services such as websites, to information about specific television channels or programs. In the preferred embodiment, database 133D includes a number of user-defined records, with each record corresponding to a computer service. Each record includes a computer-service identifier field which identifies the computer service, a communications data field

which includes data, such as a URL address or telephone number, for linking to (or establishing communications with) the computer service, and a relational field which contains a set of program or channel identifiers. Figure 3 shows the preferred data structure of computer-services database 133D.

5 Storage device 133 includes a computer-readable storage medium, for example a magnetic storage medium or electronic memory device, that stores executable, computer-service-guide software 133E which cooperates with monitor 110, tuner-receiver 120, computer 130, and computer-services database 133D to present users with options to link to computer services related to specific television channels or programs.

10 Software 133E may operate within a broader software architecture which controls numerous other functions and services of PC-TV system 100. For example, the software may operate within the software architecture disclosed in co-pending patent application "Architecture for Convergence Systems," which has the same assignee and filing date as the present application and which is hereby incorporated by reference.

15 When executed, computer-services-guide software 133E causes system 100 to operate according to the preferred method illustrated in Figure 4. The method begins first with a system initialization at step 200. Initialization entails establishing the content of EPG database 133C and computer-service database 133D, preferably as shown in respective Figures 2 and 3.

20 At step 210, or start-up, a system user sets tuner-receiver 120 to receive a specific channel signal, which preferably carries a scheduled sequence of programs, or programming events, which monitor 110 displays. For example, the user may select channel 5 and receive a channel signal that carries a sequence of NBC television programs.

25 Step 220 entails determining the current channel and the current program received by tuner-receiver 120. In the preferred embodiment, computer 130 determines or identifies the current tuner channel. Then, using the current tuner channel and the current time (including date) from clock 135, computer 130 searches EPG database 133C to determine the current program. For example, if the current channel is channel 5



(NBC), and the time is 8 o'clock on a Thursday (1997), searching EPG database 133C (as illustrated in Figure 2) identifies the program as "Seinfeld," or program identifier XYZ.

Step 230 requires searching computer-services database 133D for references to the current program (or channel.) In the preferred embodiment, this entails searching the relational fields of the computer-service records for a program identifier matching the current program. Thus, for example, searching computer-services database 133D (as illustrated in Figure 3) yields three computer-services related to the current program, specifically [www.Seinfeld.com](http://www.Seinfeld.com), [www.NBC.com](http://www.NBC.com), and [www.comedy.com](http://www.comedy.com).

At step 240, monitor 110 displays the search results, preferably automatically within a small foreground website window while continuing to display the current program in the background. (Other arrangements such as displaying the website window and television program within non-overlapping windows or as foreground windows on another background are equally feasible.) If the search results indicate the computer-service database includes no related computer-services, the display will provide a message stating this. For the Seinfeld example, monitor 110 would display a website window similar to the one in Figure 5.

In step 250, the system prompts the system user to select a computer service from the results displayed in the website window. The user selects using one of the interface devices, such as keyboard 136A, pointing device 136B, or microphone 136C. The preferred embodiment provides an option to modify the contents of computer-services database 133D.

In step 260, the system responds to the user selection of step 250. If the user has selected a computer service, step 263 attempts to link with the selected computer service via communications software 133A and modem 134, using the communications data stored within the database record for the selected computer service. If linking is successful, at step 265, the system displays data from the computer service within the website window, allowing the system user to interact with the website or computer service while also watching the television program.

If the user has elected to modify the contents of computer-services database 133D, the system, performing step 262, presents options to add a computer service record, to modify the relational datafield portion of an existing computer-service record, or to completely delete a computer-service record. So, if a new channel, program, or computer service becomes available or if an existing one becomes unavailable, the user can modify the database accordingly. In step 264, the system executes the selected modification option.

The modification feature is particularly valuable because it allows the user to define and control the relevancy of websites or computer service to television programs. For instance, the user may decide that the website [www.kellogs.com](http://www.kellogs.com) is relevant (or related) to the Seinfeld television program and add it to computer-services database 133D, with the appropriate program identifier in its relational field. On the other hand, the user may decide to delete a website or computer service previously related to the Seinfeld show.

In step 270, the system waits for the program to change, for the system user to change a channel, (or for the system user to deliberately invoke the website window with a specific command.) In either case, the system returns to start-up step 210 and repeats the method using an updated channel and time.

### Conclusion

The present invention, a system and method of associating websites or other on-line computer services, to specific programming, such as television programs, overcomes a substantial obstacle to the seamless integration of personal computers and televisions. In particular, the method and system enable users not only to establish a database of websites or other computer services, but to adaptively relate these websites and computer services to specific television programs. Ultimately, the invention gives television viewers easy "push-button" access to websites and computer services that adhere to their preferences, not someone elses.

The embodiments described above are intended only to illustrate and teach one or more ways of practicing or implementing the present invention, not to restrict its breadth or scope. The actual scope of the invention, which encompasses all ways of practicing or implementing the invention, is defined only by the following claims and their equivalents.

5

### Claims

1. A computerized system comprising:
  - a receiver for receiving a channel signal which carries a sequence of scheduled programs;
  - a database that relates data about a first computer service to at least one scheduled program; and
  - a display coupled to the receiver for displaying at least a portion of one of the scheduled programs, and coupled to the database for displaying the data about the first computer service.
2. The computerized system of claim 1 wherein the database further includes a program identifier identifying the one scheduled program.
3. The computerized system of claim 1, further including an interface device, coupled to the database, for enabling a user to enter the data about the first computer service into the database, or to change the data about the first computer service, or to relate the data about the first computer service to another scheduled program.
4. The computerized system of claim 1, wherein the display automatically displays the data about the first computer service when it displays a portion of the one program.
5. The computerized system of claim 1, wherein the data about the first computer service includes data for communicating with the first computer service.
6. The computerized system of claim 5 wherein the data for communicating with the first website includes an Internet address or a telephone number.

7. The computerized system of claim 1, further comprising:  
a computer-network communications device, operatively coupled to the database, for communicating with the first computer service.
8. The computerized system of claim 7, wherein the computer-network communications device automatically communicates with the first computer service and the display automatically displays data from the first computer service when it displays the portion of the one program.
9. The computerized system of claim 1:  
wherein the program database relates data about a second computer service to the one scheduled program and the display displays the data about the first computer service and the data about the second computer service; and  
wherein the computerized system further comprises:  
an interface device for selecting at least one of the first and second computer services; and  
a computer-network communications device responsive to the user-interface device to communicate with the one of the first and second computer services, and coupled to the display for displaying at least a portion of the one computer service.
10. The computerized system of claim 7, wherein the interface device includes a mouse, a keyboard, or a microphone wherein the computer-network communications device includes a computer and a modem.

11. The computerized system of claim 1, wherein the first computer service is a website.
12. The computerized system of claim 1, wherein the display displays the data about the first computer service during the time it displays the portion of one program.
13. The computerized system of claim 1, wherein the channel signal is a video signal, and each program is a video program.
14. A method of operating a system having a receiver for receiving a channel signal that carries a sequence of programs, a communication device for receiving data from a plurality of remote computer services, and a database, the method comprising:
  - storing data identifying at least one of the computer services in a database;
  - storing data identifying at least one of the programs in the database; and
  - logically relating data identifying at least one of the program to the data identifying the one computer service.
15. The method of claim 14, further comprising:
  - selecting one of the programs;
  - searching the database for data identifying a computer service logically related to the selected one of the programs; and
  - outputting results of searching the database.
16. In a computerized home entertainment system, a computer-readable medium storing a data structure comprising:
  - a computer-service identifier; and
  - a program identifier related to the computer-service identifier.

17. The computer-readable medium for claim 16, wherein the data structure further comprises:

communication data related to the computer-service identifier.

18. The computer-readable medium of claim 16, wherein the computer-service identifier identifies a website and the program identifier identifies a television program.

19. The computer-readable medium of claim 16, wherein the data structure further comprises:

a second program identifier related to the computer-service identifier.

20. A computer comprising computer-service-guide software for establishing and maintaining a database that relates computer services to television programs, the computer-service-guide software comprising instructions for:

storing data identifying at least one computer service in a database;  
storing data identifying at least one television program in the database; and  
logically relating data identifying at least one of the program to the data identifying  
the one computer service.

21. The computer of claim 20, wherein the computer-service-guide software further comprises instructions for:

searching the database for data identifying a computer service logically related to  
a given television program; and  
outputting results of searching the database.

22. A computer-readable medium storing computer-service-guide software for causing a computer to establish and maintain a database that relates computer services to television programs, the computer-service-guide software comprising instructions for:
- storing data identifying at least one computer service in a database;
  - storing data identifying at least one television program in the database; and
  - logically relating data identifying the one television program to the data identifying the one computer service.
23. The computer-readable medium of claim 22, wherein the computer-service-guide software further comprises instructions for:
- searching the database for data identifying a computer service logically related to a given television program; and
  - outputting results of searching the database.
24. The computer-readable medium of claim 22, wherein the computer-service-guide software further comprises instructions for:
- changing the data identifying a computer service logically related to a given television program.
25. In a convergence system, a method of managing data from a plurality of external data sources, the method comprising:
- storing data identifying a first external data source in a database;
  - storing data identifying a second external data source in the database; and
  - logically relating data identifying the first external data source to the data identifying the second data source.
26. The method of claim 25, wherein the first external data source is a television program and the second external data source is a computer service.



27. An information management system comprising:  
a graphical user interface configured to display a program guide including:  
at least one of channel-related information or program-related information;  
and  
computer-network-related information.
28. The information management system of claim 27, wherein the computer-network-related information includes Internet-related information.
29. The information management system of claim 28, wherein the Internet-related information includes website-related information.
30. The information management system of claim 29, wherein the website-related information includes a list of websites.
31. The information management system of claim 27, wherein the computer-network-related information is associated with at least one of the channel-related information or the program-related information.
32. The information management system of claim 31, further including an interface device, coupled to the program guide, for enabling a user to enter the computer-network-related information into the program guide, or to change the computer-network-related information, or to change the one of the channel-related information or the program-related information associated with the computer-service information.
33. The information management system of claim 27, further comprising:  
a computer-network communications device configured to transmit or receive the computer-network-related information.

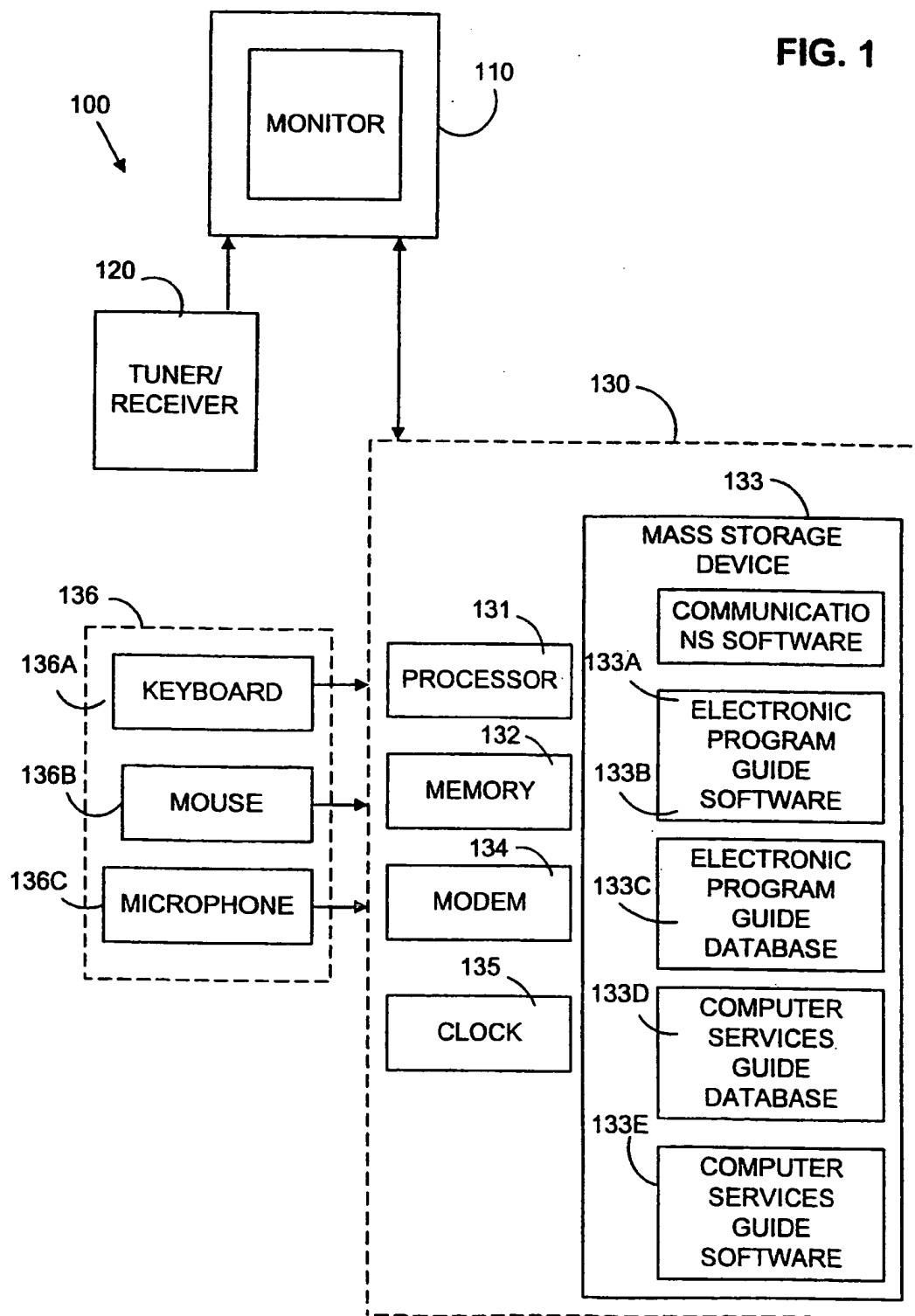
34. The information management system of claim 33, wherein the computer-network communications devices receives the network-related information and the user interface device displays the computer-network-related information in response to display of program information.

35. The information management system of claim 27, wherein the graphical user interface concurrently displays network-related information and the one of the channel-related or the program-related information.

36. The information management system of claim 35, wherein the network-related information is displayed in a foreground of the graphical user interface and the one of the channel-related or the program-related information is displayed in a background of the program-related information.

37. The information management system of claim 27, wherein the channel-related information is carried by a video signal, and the program-related information is part of a video program.

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2/5

CHANNEL 1	
TIME	PROGRAM
CHANNEL 2	
TIME	PROGRAM
⋮	
CHANNEL 5	
TIME	PROGRAM
8:00—8:30 PM THURSDAY SEPT. 25, 1997	JERRY SEINFELD

~ 133C

FIG. 2

3/5

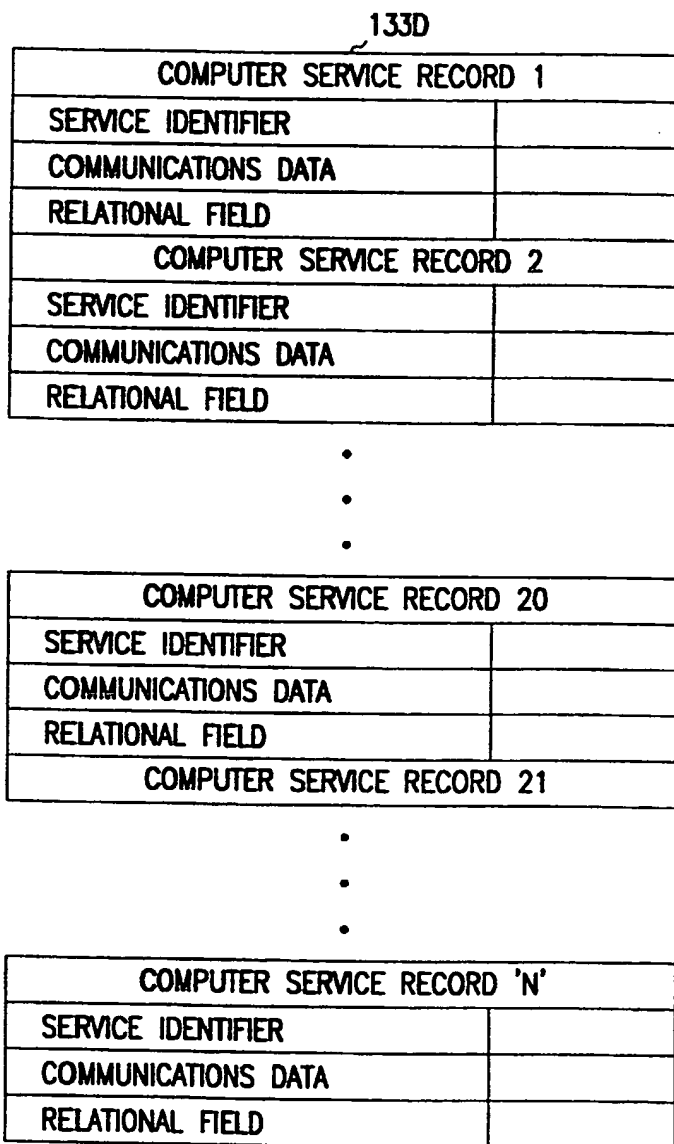
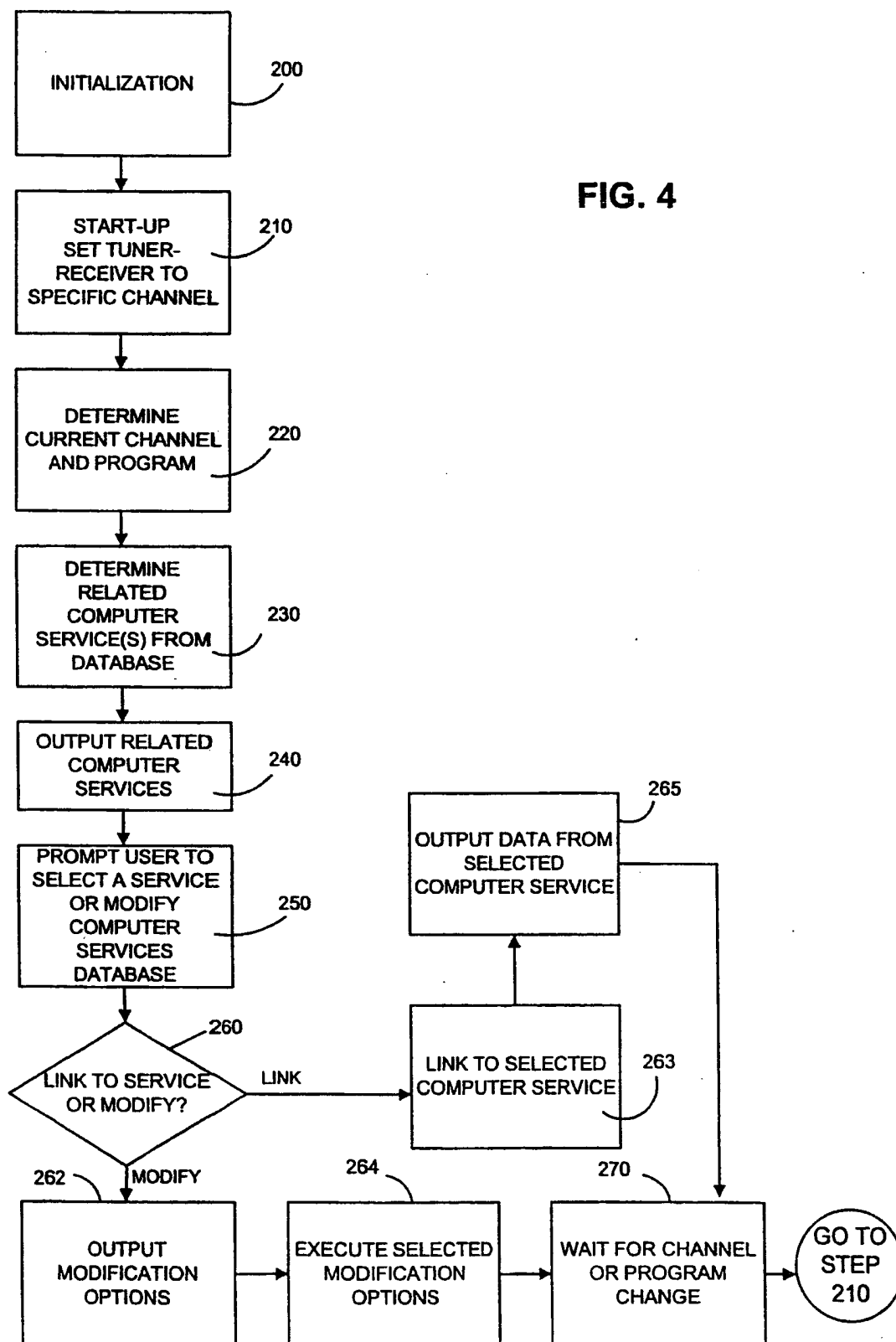


FIG. 3

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FIG. 4



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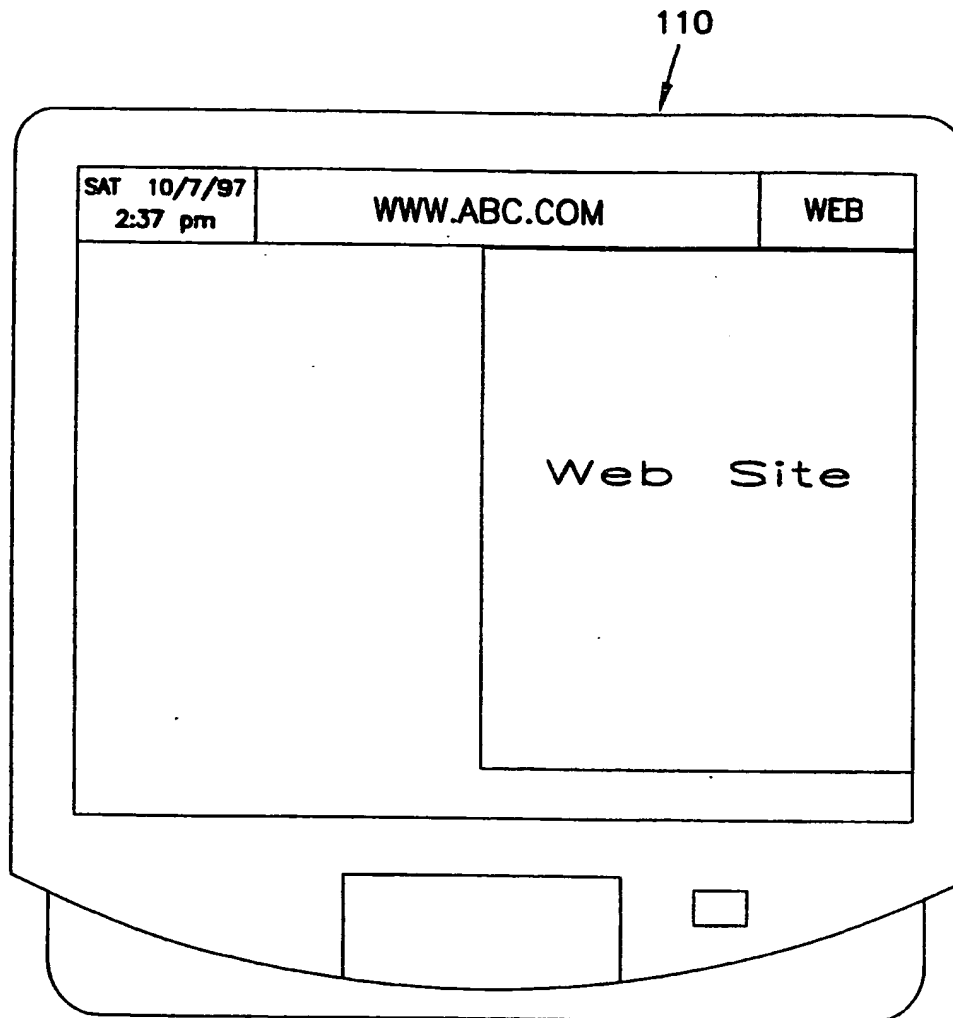


FIG. 5

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 99/00116

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 H04N7/16 H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 13368 A (BRIEN SEAN ANDREW O ;MILNES KENNETH ALAN (US); SCHEIN STEVEN MICHA) 10 April 1997	1,2,5-7, 9-11,13, 16-18, 27-31, 33,34 3,4,8,12
Y	see page 4, line 1 - line 36 see page 5, line 21 - page 6, line 2 see page 19, line 10 - line 14 see page 20, line 19 - page 21, line 18 see page 22, line 7 - page 23, line 15 see page 28, line 18 - page 29, line 10 see page 35, line 13 - line 20 --- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search

3 May 1999

Date of mailing of the international search report

18/05/1999

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/00116

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 33434 A (EARTH WEB INC ;HIDARY JACK D (US); ACTV INC (US); SPIVACK NOVA T ( ) 12 September 1997	14-35,37
Y	see page 11, line 22 - page 13, line 18 see page 16, line 15 - page 17, line 4	3,4,8,12
X	WO 97 49237 A (STARSIGHT TELECAST INC) 24 December 1997	1,5-7, 10,11, 13,14, 20,22, 25-31, 33,37
A	see page 6, line 9 - page 7, line 6 "WEBTV NETWORKS INTRODUCES REVOLUTIONARY NEXT-GENERATION SYSTEM" RETRIEVED FROM THE INTERNET, 16 September 1997, pages 1-4, XP002101851 <a href="http://webtv.net/company/media_center/webtvplus.html">http://webtv.net/company/media_center/webtvplus.html</a> see page 3, paragraph 3 - paragraph 6	1,4-8, 10,11, 13,27-31

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Internal Application No

PCT/US 99/00116

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